

EDEMA OF THE PARALYZED LIMBS IN HEMIPLEGIA,
WITH REPORT OF AN UNUSUAL CASE.

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In hemiplegia from gross brain lesion it is not uncommon to find some swelling, with glossiness and slight pigmentary changes in the skin of the paralyzed limbs; less frequently muscular atrophy and changes in the joints occur, but edema to any such extent as was observed in the following case is excessively infrequent.

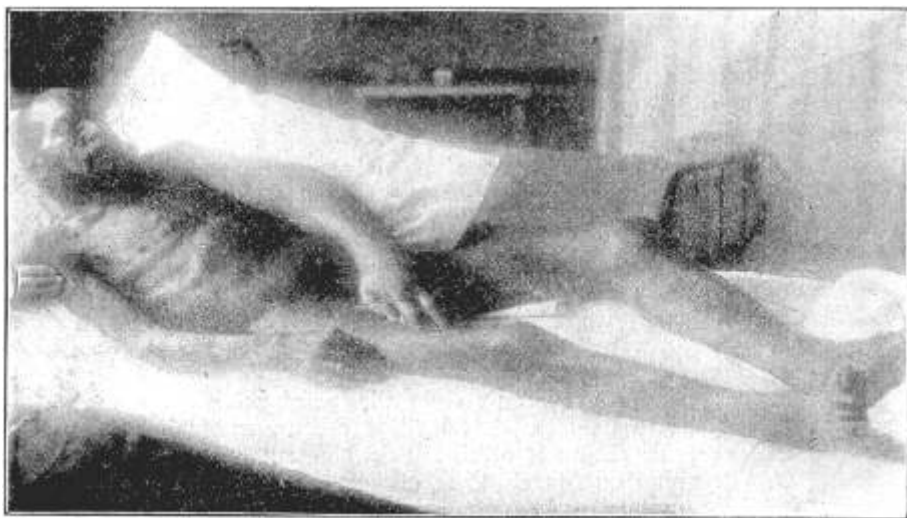
Matthew K., 55 years old, black, family history and previous personal history unattainable, is said to have had a slight apoplectic stroke several years ago, but to have recovered with but little disability. On December 15, 1897, he was noticed to be acting queerly and to have difficulty in finding his way about, so he was kept in the house. Two days later, as he attempted to arise from his chair his son noticed that his right arm and leg were paralyzed, but thinks he never lost consciousness.

Power was never regained in the paralyzed limbs, and the swelling, to be later described, came on gradually several weeks after the onset of his attack. He entered the Freedman's Hospital on March 17, 1898. It was then noted that he had a complete left hemiplegia, with swelling of the affected limbs, but no contractures.

He was first seen by the writer on October 12, 1898, when he lay helpless in bed suffering from marasmus and chronic diarrhea.

Examination October, 1898, showed a large, quite emaciated black man, completely bedridden. His mental condition was dull, but he could be gotten to reply to questions, and complained of pain in the paralyzed arm. The two last phalanges of the first finger of the left hand had been lost by an accident in early life. There was complete paralysis of the left arm and left leg. On movement the face was drawn somewhat to the right, the tongue deviated to the left. The head was drawn some distance toward the left side, and fixed in this position by a contracture. The left arm was partly flexed at the elbow, and pressed so firmly against the left side that an

ulcer had formed over the ilium. The fingers were pressed into the palm. The left leg was partially flexed at the knee and everted. The limbs were held in these positions by contractures. The left arm and hand were greatly swollen. The swelling extended from about the junction of the upper and middle thirds of the upper arm, being most marked in the forearm and hand. The whole arm felt boggy and pitted on pressure, but the swelling was painless and there was no inflammation. The bones were apparently unaffected. The swelling fell off rather sharply at the point indicated (junction of the upper and middle thirds of the arm). The skin over the



affected region was harsh and glossy, and on the posterior surface of the arm and hand there were areas of increased pigmentation, some as large as a silver dollar. The left leg and foot were also edematous and swollen. The swelling extended above the middle of the thigh, but was not so marked as in the arm and hand, nor were there any pigmentary changes. There was no edema of the face. The left side of the trunk appeared, perhaps, a little fuller than the right, but on account of the condition of the patient no satisfactory measurements could be taken. There was no edema of the scrotum. There was some wasting of the right arm and leg, but no other changes on that

This photograph is not altogether satisfactory from an artistic standpoint, but it has been reproduced because it shows very well the degree and extent of the edema.—Ed.

side. The following measurements were taken at corresponding points on the two sides:

Right arm.	Left arm.
Below shoulder 22.5 cm.	27.5 cm.
Middle of upper arm 21.7 "	32.5 "
At elbow 23.7 "	35.7 "
Middle of lower arm 19.3 "	28. "
Wrist 14.8 "	18. "
Around hand 21.8 "	25. "
Length of hand 21.8 "	21.8 "

Right leg.	Left leg.
Around great trochanter 47.2 cm.	49. cm.
Middle of thigh 35.7 "	39.7 "
Knee 36.3 "	40.2 "
Middle of leg 27.5 "	33.1 "
Ankle 22.5 "	25. "
Around dorsum of foot 26.1 "	28. "

There was no eye muscle paralysis. The pupils were even, but did not react for light or accommodation. Speech was unaffected. On account of the contractures the reflexes could not be obtained, and because of the mental condition of the patient no satisfactory examination as to sensory disturbances could be made. The heart sounds were rather weak, but there was no murmur, and no alteration in the area of cardiac dullness could be detected. The arteries were somewhat rigid and thickened. Careful examination gave no evidence of any thrombosis in the vessels of either arm or leg, nor was there any phlebitis. A few bronchial râles were heard over the chest. Examination of the abdomen was negative. No urine could be obtained. The accompanying photograph was made October 21, 1898.

The patient's diarrhea continued; he grew progressively weaker, and died on October 24, 1898.

Autopsy, October, 25, 1898, seventeen hours after death, by Dr. D. S. Lamb:

Body of large black man, slight bedsores over left ilium; nutrition poor; some wasting; left arm and leg swollen and boggy, but swelling seemed somewhat less than before death. On opening the chest the right lung was found edematous, the left lung collapsed and compressed against the spinal column. The left pleura showed old adhesions, and some recent pleurisy;

with exudation of plastic lymph; and contained about a half pint of serum, slightly blood-stained. There were some recent pericardial adhesions, and inflammatory lymph exudate, especially marked on the left side. Dissection over the region of the axillary, brachial, and femoral vessels showed neither phlebitis, thrombosis, nor any growth which compressed the vessels, nor could any tumor be found in either the thoracic or abdominal cavity. The liver was congested, the spleen small and pale. The kidneys were enlarged, rather congested, and seemed to have some increase in their connective tissue. The stomach and intestines were distended with flatus. There were some spots of congestion in the colon, but no ulceration.

Nervous System.—There was great difficulty in getting permission to open the skull, and removal of the spinal cord was not allowed.

The calvarium was of normal thickness, the dura somewhat adherent to the skull along the superior longitudinal sinus. The pia-arachnoid showed some milkiness along the vessels. The whole right hemisphere felt softer than the left, especially in the Rolandic region, about the ascending limb of the fissure of Sylvius, and in the island of Reil. There were marked areas of softening about the lower end of the fissure of Rolando. In the posterior portion of the parietal lobe and in the occipital lobe there were areas of softening, yellow in color, and about as large as a silver dollar. On horizontal section a large cyst was found on the right side, having well-defined walls and filled with reddish-colored, grumous material. This cyst occupied all of the internal capsule, had destroyed most of the lenticular nucleus, and passed forward into the frontal and backward into the occipital lobe. The arteries at the base appeared to be of good caliber, and there was no other trouble found there. The cerebellum was normal.

Microscopical Examination.—Pieces of the cortex in the Rolandic region of both sides, the whole brain axis, portions of the brachial plexus, the anterior crural nerve, the vertebral and left femoral arteries, and kidney were secured for microscopical examination. The pieces of the nervous system were hardened by Marina's method, stained by the Weigert-Vassale and Van Gieson's methods for study of the fibers, and by Nissl's method, and by thionin, for cell study. The other organs were hardened in alcohol and stained with hematoxylin and eosin.

In the sections of the cortex from the right side there was some increase in the neuroglia, and in the softened areas many cells had disappeared, but in those which remained there were no characteristic changes. Throughout the brain axis and in the upper part of the cervical cord the pyramidal tract from the

right hemisphere was degenerated, as were also most of the cerebro-pontine fibers, both those from the frontal and those from the temporal and occipital lobes. In the medulla and cord the cells of the various nerve nuclei appeared to be normal, though they were, perhaps, somewhat fewer in number on the left (the paralyzed) side. The sections from the brachial plexus and anterior crural nerve showed nothing abnormal. The vertebral arteries were somewhat narrowed in caliber, especially the left, the intima being thickened. The femoral was normal. The kidneys showed slight interstitial nephritis.

It is evident that the pathological findings do not differ from those met with in ordinary cases of hemiplegia, and do not directly explain the occurrence of the edema.

The condition of edema in hemiplegia is a rare one. Gowers¹ states that in hemiplegia slight edema is often present in the paralyzed limbs, and that it may be of greater extent, but mentions no example of its occurrence in any such degree as in this case. On searching the recent literature, I have only been able to find reports of three such cases, one by Hare,² of Philadelphia; one by Preobrajensky,³ of Moscow; and one by Gilbert and Garnier,⁴ of Paris. In the first of these the right arm alone was affected. In the second there was extensive edema, and eventually gangrene of the paralyzed extremities, but the case was complicated by aneurism of the aorta and thrombosis in the vessels of the hand and foot. The last case was exhibited before the Société de Biologie, of Paris, as one of hemiplegia with greatly swollen hand, presenting a condition not to be distinguished from the so-called "succulent hand," declared by Marinesco to be pathognomonic of syringomyelia. The patient was still alive when the observation was published. In the first two cases the autopsy showed, in common with the one reported here, that large areas of the brain were affected. There is no satisfactory explanation of the production of the localized edema, however.

Von Monakow⁵ makes bare mention of edema in hemiplegia, though he says that in the early stage there is a

¹Gowers, "Diseases of the Nervous System."

²Hare; *Journal of Nervous and Mental Disease*, 1898, p. 189.

³Preobrajensky, *Memoires médicaux de Moscou*, 1896, No. 16. Ref. in *Révue neurologique*, 1897, p. 73.

⁴Gilbert et Garnier; *Comptes rendus de la Société de Biologie* 1897.

⁵Von Monakow; "Gehirnpathologie."

tendency to slight swelling and increased warmth of the paralyzed limbs, while in the chronic stage coldness and lividity, with glossiness of the skin, are the rule. In speaking of other trophic disturbances in hemiplegia (particularly of muscular atrophy), however, he calls attention to the fact that in every case the brain lesion has been quite extensive, and this seems to have been the rule also in the cases of edema in hemiplegia which have been reported.

The circulation of both blood and lymph is favored by the action of the muscles; hence, loss of power in the muscles on the one hand, and failure of vasomotor control on the other, would seem to be responsible for the production of stasis and edema on the paralyzed side. As to why this so rarely occurs, however, we have no definite information.

147. ANALGÉSIE ÉPIGASTRIQUE PROFONDE CHEZ LES TABÉTIQUES (Deep Epigastric Analgesia in Tabetics). Prof. Pitres (Journal de Médecine, 70, 1899, p. 60).

Pitres has added a new sign of some importance to the symptomatology of tabes. The sensation of anguish, leading sometimes to unconsciousness, which follows a blow on the epigastrium is well recognized. But in certain pathological conditions, the deep epigastric sensibility, normally so acute, is completely absent. In cases of this kind one can make forcible pressure over the pit of the stomach, or strike the epigastrium violently with the fist or a hard body, without causing the patient any discomfort. Deep epigastric analgesia exists in a very high degree in a large number of cases of hysteria. This explains the indifference with which the convulsionnaires of Saint-Médard strike themselves on the stomach with stones or bars of heavy metal. This deep analgesia is not only found in hysteria, but is met in a certain number of cases of organic maladies of the nervous system, notably in general paralysis and in sclerosis, but in tabes its frequency is relatively great. In this last malady in particular, Pitres has found the epigastric sensibility very much diminished, twenty-two times in fifty cases, that is to say, in almost half the cases, and completely abolished nine times in fifty cases. This analgesia does not appear to be associated with any sensitive trouble, anesthesia of the skin, loss of abdominal reflex or gastric crises. The only functional trouble with which it appears the most habitually associated, is loss of hunger sensation. It is difficult to explain this loss of sensation—and also the analgesia of the testicles, breasts and anesthesia of the bladder, urethra and rectum. It is probable that these conditions are due to a visceral neuritis analogous to the peripheral neuritis which causes in tabes certain disturbances of the special or general senses.

FREEMAN.